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Role of Participation and Awareness to Cooperative in Common Property Institution Management: *A Case Study of Forest in Aceh, Indonesia*

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Abstract - This paper reviews some of the central concerns and findings of writings on forests as they related to the theoretical ambitions of commons scholars, and to efforts to govern forests more sustainably and equitably in Aceh. The review is especially important in the context of unfolding efforts to govern forests in new ways over the past three decades cause conflict between Government Republic of Indonesia and Free of Aceh Movement. However, as important as the review is an assessment of the achievements of this literature, existing blind spots, and potential new areas of exciting research and investigation. The review suggests specific areas in relation to methods, data, and theories of common property that will advance the field further. It would be no exaggeration to say that the study of forests as commons has been central to the development of scholarship on common property. Equally certainly, the interest in forests has generated a vast corpus of research outside the field of common property. The magnitude, variety, and depth of this body of research is an accurate reflection of the many different ways in which forests have been and continue to be central to human survival, livelihoods, and prosperity.

Keyword : Free of Aceh Movement, Government Republic of Indonesia, common property, conflict
Paper Type : Research Paper

Introduction

Ever since the publication of Hardin's articles 'The Tragedy of the Commons' there has been a growing debate on common pool resources, property rights, and resource degradation. The concept has been used to explain overexploitation of forests and fisheries, overgrazing, air and water pollution, abuse of public lands, population problems, extinction of species, and other problem of resource misallocation (Stevenson, 1991). When property rights to natural resources are absent and unenforced i.e. when there is open access, no individual bears the full cost of resource degradation. This result is 'free riding' and over exploitation, what Hardin termed the 'Tragedy of the Commons' (Hardin, 1968). It was thought that a resource held under a common property resource (CPR) regime is inherently inefficient since individuals do not get proper incentives to act in a socially efficient way. The main goal of managing natural resources is to maximize the long-term economic rent. Until recently many scholars believed that community-based management generates little or no rent due to absent of proper management. As a consequence scholars have long questioned the incentive for efficient use of common pool resources under CPR regime (Gordon, 1954; Scott, 1955; Hardin, 1968) and solutions have been proposed, such as state control and management (Hardin, 1968) or privatisation of the commons (Demsetz, 1964). The property rights school argues that private property is the most efficient way to internalise the externalities that arise in former cases. It also makes the contention that private property rights will spontaneously emerge in reality to increase efficiency (Demsetz, 1967).

Policy proposals for resolving CPR dilemmas often follow one of two alternatives. The first approach is to use a governmental organization to impose fines or other forms of sanctioning to restrain people from extracting the common resource. The second approach solves the dilemma by privatization, that is, by defining property rights that transform a common resource into a private one.

Both approaches can be difficult to implement. In many cases, governmental intervention is prohibitively expensive. Especially in settings where the common resources are spread over large and remote areas, sufficient monitoring is impossible with limited resources, a situation often encountered in

developing countries. Furthermore, there are numerous examples where governmental intervention has failed (e.g. IUCN, 1999) because common resource users did not perceive the intrusion of external agents as legitimate and therefore did not follow the imposed rules (Anderies *et al.*, 2004). Privatization, however, does not solve the dilemma in the case of migratory resources (Clark, 1990) and raises difficult questions concerning the division of the property rights (Baland and Platteau, 1998).

An increasing number of scholars, however, advocate that decentralized collective management of CPRs by their users could be an appropriate system for overrating the 'tragedy of commons' (Berkes, 1989; Wade, 1988; Jodha, 1986; Chopra et al. 1989; Ostrom, 1990, 1994). More careful analysis of the foundation of CPR regimes in developing countries have shown that local institutional arrangements including customs and social conventions designed to induce cooperative solutions can overcome the collective action problem and help achieve efficiency in the use of such resources. (Gibbs and Bromley, 1989; Ostrom, 1990). Scholarship on the commons argued that Hardin confused common property with open access, failing to distinguish between collective property and no property (Ciriacy-Wantrup and Bishop, 1975). Even the common grazing lands in Hardin's classic 'Tragedies of the Commons' were well looked after for many centuries, before they declined for reasons unrelated to any inherent flaw in the commons system (Cox, 1985). The tragedy tends to be related to the breakdown of existing commons systems due to disruptions that have originated externally to the community (Berkes, 1989). Hardin's tragedy of the commons often results, not from any inherent failure of common property, but from institutional failure to control access to resources, and to make and enforce internal decision for collective use. Institutional failure could be due to internal reasons, such as the inability of the users to manage themselves, or it could be due to external reasons, for example an incursion of outsiders (Dove, 1993; Berkes and Folke, 1998). Failure could also occur as a result of factors such as population growth, state intervention, market penetration, and introduction of new technology. Notwithstanding different views and debates on the efficiency of resource utilisation under common property rights regimes, it is generally agreed that resource management under common property institutions is the most viable option for a long-term economic and ecological sustainability of the commons.

A growing body of research suggests self-governance by local user groups as an alternative to the two standard approaches. There is considerable evidence that self-governance by local users can be successful (Acheson, 1975; Cordell, 1989; Ostrom, 1990; Ostrom and Gardner, 1993; Begossi, 1995; Leal, 1998; Ostrom *et al.*, 2002). A rapidly growing theoretical explores the key factors that affect the likelihood of successful cooperation in the provision of public goods and in the management of common-pool resources (Ostrom, 2000). From a development perspective, factors that can potentially be actively promoted as a means to improve cooperative self-governance are of particular interest.

The current evidence about effects of role participation on the likelihood of cooperation in resource management is largely based on observational studies (e.g. Patela *et al.*, 2007). However, with observational evidence alone it is difficult to isolate the role of participation and to understand its importance regarding the likelihood of cooperation and other forms of collective action relative to other important factors such as individual characteristics or existing beliefs about the cooperation of others.

Research Question

After the peace agreement between the governments of the Republic of Indonesia with the Free Aceh Movement on August 15, 2005 at Helsinki Finland made the situation in Aceh is more conducive and safe. This situation has an impact on forest-dependent communities' area as place to earn a living. After many years of conflict, forest communities cannot use the forest as a place to earn a living. However, after the peace agreement between the government of the Republic of Indonesia and the Free Aceh Movement has been used as a source of forest income. When compared the state of the forest before the peace agreements much better than the current situation. This is due to conditions more conducive and safe so that people are free to make use of the forest with no restrictions and any action from the government. Community forests are considered common property and utilize it together without any party for the ban. Public perception of forest as common property makes forests more destroyed and uncontrolled. Therefore, this paper will discuss the role of common property forest management in Aceh.

Objective Research

The main objectives of this research are: (i) What is causing deforestation in Aceh?; (ii) What are the factors an impact safety to deforestation in Aceh?; and (iii) Does the theory of common property occur in forest use in Aceh?

Significance of the Study

The importance of this research, among others, can serve as a solution to resolve the crisis, and the causes of forest destruction. In addition, this paper can simultaneously involved governments more serious in forest management and to bring awareness to the community relating to the use and management of forest resources.

The organization of this study will be discussed, among others consists of the introduction. Characteristics of institutional arrangements is then further discussed. Common property institutions and cooperation in CPR in then discussed in the next section. Finally, the conclusion and recommendation are provided in the last section.

Characteristics of institutional arrangements

Institutions and how their variations influence forest conditions are the intense focus of research by scholars of forest-based commons from the very beginnings of research on the commons. This research has thus led to many generalizations that help clarify our understanding of the effects of rules on user incentives and behaviour. Rules that are easy to understand and enforce, locally devised, take into account differences in types of violations, help deal with conflicts, and help hold users and officials accountable are most likely to lead to effective governance. These basic insights, of which several had been asserted in case studies of the commons for long, were stated systematically by McKean (1992) and Ostrom (1990) and more recently by Dietz *et al.* (2003, p. 1910). Much of this conventional wisdom on the nature of effective local institutions has also been confirmed by the contributions of researchers on forest commons.

Although institutional features-related findings of forest-commons scholars are highly policy relevant, their adoption – quite apart from the politics that shape all policy making and implementation – needs additional translation work that has yet to be undertaken. Consider an example. It may appear that statements such as 'rules should be locally created and enforced' are quite transparent. However, what they mean in terms of practical implementation in concrete contexts is in fact quite open to interpretation because of instabilities in the meanings of every operant word in the phrase: rule, local, creation, and enforcement.

The import of the insight lies in the recognition that: a) local users and their organizations have comparative if not absolute advantage when it comes to knowing about the resource, other users, and environmental conditions, and b) local users are best equipped to use this knowledge to create institutional arrangements more suited to governing forests effectively. But even if one accepts the point that those with better knowledge about the resource will use it to promote more sustainable and equitable outcomes, 'rules should be locally created and enforced' remains quite abstract without clarification about types of rules, meaning of local and the basis of qualification as local, how rules should be created and provisions made to change them, and forms of enforcement. Ostrom (2005) suggests that there may be literally hundreds of thousands of different rule combinations from which decision makers can choose. Polity interpretation of seemingly clear and concrete recommendations runs headlong into this plethora of local rule diversity.

In many situations, some kinds of rules may be better designed by those not at the local level. However, what local means in this context is also contested (Raffles 1999). Local can be defined in terms of birth, residency, contiguity of location, degree of dependence on the resource, contributions to the creation of a local institution, and so forth. The organizations or set of decision-makers charged with creating and modifying rules may be elected (through a variety of rules), nominated or appointed (by many potential authorities), and may adopt rules in many different ways as well. Enforcement comes in many varieties, raising questions about who should enforce, how strictly, for what remuneration, and who will monitor the enforcer. The economy of expression in findings related to institutions is thus a function of heroic abstraction from the context that theoretical knowledge of the commons takes for granted.

Characteristics of Stakeholders

In examining stakeholder's group characteristics, scholars of commons have often used the literature on collective action as their starting point. As a result issues related to the size of the group, whether the boundaries of the group are clearly defined, the nature of heterogeneity among group members, extent of interdependence among them and their dependence on the resource, and whether the group possesses sufficient resources to meet the costs of initiating and maintaining collective action have been crucial variables to examine (Poteete and Ostrom 2004; Ostrom 1999; Agrawal and Goyal 2001). Despite the wealth of work on this set of issues however, the ways in which these variables influence the probability of collective action, and in turn the condition of forests, continues to be contested.

The nature of disputes is clear when one examines the role of group size (Agrawal and Goyal 2001; Ostrom 1999), but especially evident in relation to group heterogeneity. It can fairly be argued that most resources are managed by groups divided along multiple axes, among them ethnicity, gender, religion, wealth, and caste (Agrawal and Gibson 1999). Different dimensions of social versus political versus economic heterogeneity have potentially differing impacts on resource governance (Baland and Platteau 1999, p. 773; Bowles and Gintis 1998: 4). These difficulties in knowing which dimensions of heterogeneity are relevant in a given context and, for what reasons, are compounded by difficulties in generating measures of heterogeneity that capture its many different dimensions and their potentially divergent effects on resource governance outcomes. The divergent conclusions of a large number of empirical studies suggest that similar kinds of group heterogeneities may produce different effects under different circumstances (Adhikari and Lovett 2006; Neupane 2003)

Recognizing the important and unclear effects of heterogeneity on the governance of the commons, Baland and Platteau (1996) provide an initial attempt to classify them into three types: in endowments, interests, and identities. They hypothesize that heterogeneities of endowments have a positive effect on resource management, whereas heterogeneities of identity and interests create obstacles to collective action. However, their effort needs further analysis and discussion. The categories into which they classify heterogeneities are not mutually exclusive. For example, heterogeneities of interests or identities may lead to different types of economic specialization and different levels of endowments, which could in turn lead to mutually beneficial exchange. Nor is it clear that heterogeneities in identities and interests are necessarily obstacles to collective action. Other scholars have distinguished between the role of heterogeneity in assisting the emergence of collective action, but hindering its maintenance. Finally, Poteete and Ostrom (2004) suggest that it is difficult to identify direct relationships between heterogeneities and resource governance outcomes because the effects of heterogeneities are mediated by institutions, and relatively little research on the subject has attempted to identify the independent and mediating effects of institutions. Their argument is an important extension of earlier suggestions that institutions mediate the effects of contextual variables such as population, markets, and other socioeconomic factors on resource conditions. Nevertheless, despite the increasing amount of work on group level heterogeneities and inequalities, both theoretical and empirical evidence on the subject is highly ambiguous. It is possible to ensure effective resource governance even in groups that have high heterogeneities in interest through coercive enforcement of conservationist rules (Jodha 1986; Peluso 1993, but see also Libecap 1989).

However, the impact of intergroup heterogeneities on distribution of benefits from forests may be more amenable to definition (Adhikari, 2005). Significant research on forest-based commons suggests that the economically and politically better-off group members are often likely to gain a larger share of benefits from a resource (Agrawal, 2001a). This is not to say that intergroup inequalities are a result of collective action; rather, it is simply to point out that inequalities within a group are not necessarily reduced because group members are willing to cooperate toward a collective goal when there are high levels of existing inequalities.

A related stakeholder's group characteristic over which there has been significant research concerns poverty. Poverty directly relates to the ability of users to generate the necessary resources and capacity to protect and regulate common pool resources. Nevertheless, precisely what this truism means for the success of institutionalized protection and allocation of resource-based benefits is still not certain. Does poverty leads to a greater reliance on the commons (Jodha, 1986) and therefore incentives for their conservation or for higher levels of harvesting and degradation, or do increasing levels of wealth, at least initially, lead to greater degradation of commons? These are questions whose answers are not certain. Similarly, there is at least some divergence of views over whether the poor benefit more from the commons in comparison to those who are better off. However, one major contribution of scholars of

forest-based commons on this issue has been to highlight the importance of equity concerns and poverty issues in the regulation and use of commons.

In summary, whether the relationship between different measures of successful governance of forest commons, and group characteristics such as size, heterogeneity, interdependence, dependence on forests, and poverty is negative, positive, or curvilinear seems subject to a range of other contextual and mediating factors, not all of which are clearly understood (Agrawal, 2001b). Broadly speaking, smaller, interdependent, more homogeneous, and relatively well off groups that are dependent on their resources and do not suffer sudden shocks in their demands upon the resource are more likely to be successful in creating institutions that help regulate forest commons more effectively. But the effects of these variables in specific conditions can vary.

The theoretical work related to inequalities and heterogeneities by commons scholars has an important bearing on how specific forms of social heterogeneities such as those related to gender, indigeneity, ethnicity, class, and income affect outcomes. The politics of gender and indigeneity has been especially prominent in this regard in the contributions of scholars of forest commons (Freudenberger *et al.,* 1997; Holt, 2005; Larsen, 2003).

Common Property Institution

Recent literature on CPR management criticized "Hardin's Tragedy of the Commons" often results, not from any inherent failure of common property, but from institutional failure to control access to resources, and to make and enforce internal decisions for collective use. These critiques argue that Hardin's tragedy of commons' is applicable only to the situation of appropriation of 'open access resources' and not to commons i.e. common property resources (Ciriacy-Wantrup and Bishop, 1975; Bromley and Cernea, 1989). In case of open-access and unregulated common property individuals do not get proper incentives to act in a socially efficient way. In the literature of common property, broadly three different schools of thought have emerged on the institutional arrangements to avert the tragedy of commons. According to property, rights school the problem of over exploitation and degradation of common property resources (CPRs) can be resolved only by creating and enforcing private property rights (Demsetz, 1967; Johnson, 1972; Smith, 1981; Cheung, 1970). Private property is considered to be the most efficient way to internalise the externalities generated from over exploitation of the commons. The scholars of second school of thought advocate that only the allocation of full authority to regulate the commons to the external agency i.e. state property regime can reduce the overexploitation of CPRs (Hardin, 1968). Institution building at the community level for managing common-pool resources has emerged as a third possibility. An increasing number of scholars advocate that decentralized collective management of CPRs by their users could be an appropriate system for overrating the 'tragedy of commons' (Berkes, 1989; Wade, 1987; Jodha, 1986; Chopra *et al*., 1989, Ostrom, 1990). Ostrom (1990) argues that collective action for CPR management will be long enduring and successful under conditions of well-defined boundaries, congruence between appropriation and provision rules, graduated sanctions, efficient conflict-resolution mechanisms, and effective monitoring.

Though the management of CPRs and its implication to environment and poverty has been well studied in India, no systematic effort has yet been undertaken in Nepal this regard. Some of the studies have only touched upon the issue of CPRs and role of common property institutions in regulating the access and conservation rules (Springate-Baginski *et al*., 2000; Malla, 2000) but no comprehensive effort has been made to integrate the impact of local management institutions on rural local livelihoods and sustainability of common property resources at the community level. Moreover, most of the previous studies (in both Nepal and India) do not explicitly analyse the equity of resource distribution within the community. Very few studies on equity and distributional implication of CPR institution sexist. McKean (1992) argued that entitlement to products of the commons varies to a surprising extent. Hill and Shields (1998) observed that the community incentives in JFM in India are not so clear-cut; however, the main losers in JFM are fuel wood head loaders who are often from the poorest subgroup within the village. Ribot (1995) for Senegal and Andersen (1995) for India report how wealthy and influential villagers in control of supposedly democratic forest councils are able to use state resource laws to their personal benefit and to the detriment of the poorer and powerless resource users.

Some recent literature, however, argues that property rights by themselves do not provide adequate incentives and conditions for sustainable management. Appropriate cost-benefit sharing

arrangements, together with empowerment of resource users, technical assistance to develop and strengthen local organizational capacities, and support equitable and sustainable management efforts are examples of other essential elements. The success of the property rights regime depends upon the congruence of ecosystem and governance boundaries, the specification, and representation of interests, the matching of governance structures to ecosystem characteristics, the containment of transaction costs, and the establishment of monitoring, enforcement and adoption processes at the appropriate scale (Eggertsson, 1990; Ostrom, 1990; Bromley, 1991; Hanna, 1992; Hanna and Munasinghe, 1995). While the aggregate gains from reducing common pool problems or promoting economic growth through the definition or redefinition of property rights are unlikely to be controversial, the distribution of wealth and political power inherent in the proposed rights structure will be a source of dispute (Libcap, 1989). Restricting the access of poor people to natural resources through changes in property rights structure in common-pool resources is likely to increase the level of poverty unless specific measures of compensatory transfer schemes are in place to safeguard the interests of the most vulnerable section of the community. There seems no reason to suppose a priori that institutions are always efficient and equitable and they serve the purpose that the institutions were created for.

CPR institutions serve a number of important economic functions like coordinating the formation of expectation, encouraging cooperation, and reducing transactions costs. The importance of transaction costs in any economic exchange is highlighted by many scholars (Coase, 1960, Williamson, 1975, 1985; Cheung, 1983, North, 1990). Some economic and social science literature emphasises that homogeneity or heterogeneity among agents in any society reflects the levels of trust, which influences the emergence of local management institutions through its impact on costs of transactions. Transaction costs associated with trading are reduced by an increase in levels of trust between trading partners and the development of institutions that provide incentives for lasting cooperation (Coleman, 1988; North, 1990; Ostrom, 1999; Woolcock, 1988). Zak and Knack (2001) posit that heterogeneous societies, especially those with weak formal and informal institutions, have lower trust and retarded economic performance than less heterogeneous, higher trust societies. Nonetheless, in many empirical studies, physical input and property rights are taken as variables and transaction costs of resource management seldom incorporated in the 'price' of resource consumption, though they can be a significant component of resource use. It has been reported that transaction costs of community-based forest management are significantly higher for poorer users (Richards et al., 1999). In many cases, benefits from resource management are exceeded by management costs (Hanna, 1995). A common property regime would not have the need for extensive records on boundaries and sales, but instead require meetings and discussions where the co-owners decided their strategies for the coming period (Bromley, 1991) which constitute a significant portion of management costs. Most of the recent literature on heterogeneity and collective action presume that socio-economic differentiation and group heterogeneity makes cooperative arrangements more difficult and innovation of local management institutions becomes impossible due to high transaction cost.

The assertion that institutions are always optimal is ludicrous when confronted with reality. Institutions created by man are not always optimal, efficient, and egalitarian. Without careful empirical analysis (which is rare) functionalist explanations may become justifications for irrational or non-functional institutions (Bates, 1995). There seems no reason to suppose a priori that competitive pressures are always sufficient to break up less than optimal institutions. Institutions do not always decrease transactions costs but might actually, when they are inefficient, increase transaction costs. Based on review study on CPR management in Zimbabwe, Campbell *et al.* (2001) argue that there is a fair degree of misplaced optimism about CPR institutions since the formal rule-based system that form the cornerstones of CPR management are gradually replaced by donor-assisted intervention rooted in norm-based controls. North (1990) pointed out that not all institutions are efficient and powerful groups to serve their particular interests can capture institutions of collective action. In addition, it may be the richer members of the community that dominate local politics and organizations as found in JFM in India where benefits from the system goes to certain sectors of the community (Saxena, 1989). Understanding the determinants and impact of common property institutions and distributional implication of CPR regime is essential for informing forest policies and programs in Nepal and other South Asian countries where much policy emphasis currently is being placed in promoting community-based institutions for forest resource management and poverty reduction through better management of the commons.

Consistent with growing theoretical literature, there is enough empirical research in India dealing with commons and the dependence of poor on the CPRs (Chen, 1991; Pasha, 1992; Jodha, 1985a, 1985b,

1986, 1990, 1995; Iyengar, 1997, 1989; Beck and Ghosh, 2000; Beck, 1994, 1998; Agarwal, 1991, 1995, 1997; Singh *et al*., 1996; Iyengar and Shukla, 1999). Jodha observed that rural poor are heavily dependent on CPRs for their livelihood. In a study of 21 districts of seven States of India, he found that the privatisation of CPRs as a strategy to help the rural poor yielded a negative results and also reduce the productivity of the commons. Iyenger (1989) in his study of Gujarat, India has observed that it is the population pressure induced privatisation that is mainly responsible for the degradation of CPRs. Chopra *et al*. (1989) in their study of Hariyana highlights the importance of participatory management in controlling the CPRs. They argue that government's failure to preserve CPRs together with their excessive exploitation for developmental activities has led to serious degradation of the environment with ecological repercussions. In a similar study in North Western Himalayan region, Singh and Ram (1997) argue that the success of a strategy for CPRs often depends upon local participation and institution. Though assessing the impact of CPR institutions on environmental sustainability is extremely difficult, Meinzen-Dick *et al.* (1997) noted that property rights affect the time horizon for resource use, and incentive for conservation, as well as for investment in improving the resource. Most of these literature emphasized that efficient institutional arrangements are very important in many common property resource management systems to ensure equity and sustainability of resource management at the local level. Gibbs and Bromley (1989) noted that a well functioning common property regime will probably be distinguished by i) a minimum (or absence) of disputes and limited effort necessary to maintain compliance, i.e. the regime will be efficient; ii) a capacity to cope with progressive changes through adaptation, such as the arrival of new production techniques, i.e. the regime will be stable; iii) a capacity to accommodate surprise or sudden shocks, i.e. the regime will be resilient; and iv) a shared perception of fairness among the members with respect to inputs and outcomes, i.e. the regime will be equitable.

Cooperation in CPR

Common-pool resource dilemmas, especially in developing countries, have been a key interest of researchers examining how deliberation (and communication more generally) can promote efficient resource use through enhanced cooperation (e.g. Basurto, 2005; Armitage, 2005). Recently, researchers have complemented the findings of these observational studies by laboratory experiments in which opportunities to communicate could be directly manipulated in situations similar to CPR settings (reviewed by Ostrom, 2006). Case-study research has found that involving stakeholders can promote sustainable management (e.g. Patela *et al.,* 2007), but it has also been found that community-based project design with cooperative mechanisms might not solve management without concomitant political and statutory backing (Carter and Hill, 2007). Furthermore, it appears that field settings, unlike experimental settings, produce highly variable results, which highlight the important role of contextual factors beyond those examined in the laboratory experiments (Carpini *et al*., 2004; Levitt and List, 2007). This result suggests that interesting further insights could be gained by experiments that manipulate opportunities for communication in a field setting.

In assessing more specific hypothesized effects of public deliberation on cooperation in resource management, it seems useful to distinguish effects through impacts of deliberation on the individually available information set (including information about efficiency gains of cooperation and about the likely behaviour of other individuals) and effects mediated through perceived "procedural" benefits of participatory decision-making.

Histories of participation by local people in forest management in India

India, which has a long history of local participation in forest management, was among the first to formalise the arrangements for community involvement in recent years, with the concept of Joint Forest Management (JFM) in 1990. Before then the previous Social Forestry and Wastelands Programme, which had aimed to support reforestation under the supervision of the authorities, had failed to arrest deforestation and degradation. The objective of JFM was still to rehabilitate depleted state forests but with the direct involvement of forest-dependent communities in their protection and management, although the government has retained ownership of the land (gives a very full account of the development of participatory forest in India).

The criticism has been made that bureaucratic attitudes still influence the implementation of JFM. A recent study of several hundred senior and middle-level managers of four state forest service's

which are implementing JFM shows a disparity between the participatory ethos of JFM and the value system of bureaucracies (Kumar and Kant. 2003). The study points out that the implementation of a participatory policy requires also the reform of legal and administrative frameworks, while a study in Cameroon notes the need for conflict resolution between the various interests. Before decentralization such conflicts was vertical, afterwards they were horizontal.

Another example comes from Tanzania where it is estimated that more than 90% of people use firewood for domestic energy. Strategies have been introduced which involve communities and stakeholders in forest management under Participatory Forest Management (PFM); high priority has been given to the implementation of these programmes in the national forest policy and in the National Forest Programme, with legal and institutional changes to support implementation. Over 900 out of 10 000 villages practise PFM, with nearly 442 000 ha of woodland under Community Based Forest Management, and over 396 000 ha under Joint Forest Management.

However, participatory forestry is not only about wood. Cameroon has reported a project (supported by UK) in the development of community participation in wildlife management, including the lucrative bush meat trade while Mozambique has revised forest policy and laws to create an environment to enable community forestry and wildlife management in 61 community-based pilot initiatives (Mansur and Zacarias 2003).

The management of woods by communities is by no means confined to developing countries. The UK started to facilitate the management of former state-owned woodland by communities almost twenty years ago, and now there are 230 woods fully or partially controlled by communities in Scotland. One of the features of management by local groups in Scotland has been the emphasis on native broad-leaved species, with long-term plans for the conversion of several of the former commercial conifers to broadleaved species and the encouragement of native wildlife such as otters.

Site Selection

A significant shift in thinking about the management of all types of forests has been the development of participatory processes, which has involved reduction in centralised government management of forests. It has often been accompanied by political decentralisation or devolution of responsibilities. A great many Commonwealth countries have reported experience in developing and implementing community and participatory management schemes.

Utilization of forest in Aceh has been done for generations, but after the conflict ended Aceh forest area decreases. Site selection will be carried out in three Aceh areas in the districts of Aceh Barat, Aceh Besar and Pidie. The selection of these three areas is because the region is a region that often occurs in the case management and utilization of forest resources and the conflict between the government and local communities. During these communities in three regions often exploit forest resources without supervision and prohibition of any party, including the government. They have regarded the forest as no owners that anyone has the right to utilize and not willing to abide government regulation or prohibition of what else to preserve.

Appropriate use and conservation of natural resources is of increasing importance as biological diversity declines throughout the world. Human institutions define relationships between people and the environment, and can limit land use and enable conservation. The establishment of institutions suited to sustainable use of natural resources presents significant challenges in developing countries in Indonesia (Aceh), where intense poverty makes land use critical to human survival. The response to this challenge by many governments in Indonesia has been the creation of protected area institutions.

After the peace, agreement between the Government of the Republic of Indonesia and the Free Aceh Movement (GAM) in 2005 in state of Aceh continues to extinction. This happens because it is caused by a period of freedom and end to the conflict in Aceh that has lasted nearly 30 years. Communities with free use of the forests without any party. They all consider the forest as common property and can be utilized to gather without any party protected.

Analysis of common property regimes is particularly relevant to the management of natural resources in Aceh. The struggle for land rights has been a source of conflict in Aceh for 3 decade, shaping the current management of Aceh natural resources as away to avoid the loss of forest in Aceh.

The prevailing view currently in Aceh can be stated as follows: If a group of people are placed in a situation where they could mutually benefit if all adopted a rule of restrained use of a common property resource, they will not do so in the absence of an external enforcer of agreements. Each individual has an

incentive to ignore the social costs of his resource use for fear that others will capture the benefits of the resource before he can. The lack of exclusion from the resource thus creates an incentive for a rate of aggregate use, which exceeds the physical or biological renewal of the resource.

Now problem to use of natural resources in Aceh to define the conditions under which a set of common-property resource users may agree to follow a rule of restrained use without an external enforcer of the agreement - is a sub-problem of the theory of public goods, which is a sub-theory of the theory of collective action. Collective action is action by more than one person directed towards the achievement of a common goal or the satisfaction of a common interest (that is, a goal or interest that cannot be obtained by an individual acting on his own). If the common goal or common interest is characterised by infinite benefits and non-exclusion, the achievement of that common goal or interest means that a public or collective good has been provided. Thus, the collective action might be 'formulation of a rule of restrained access to a common property resource and observance of that rule', and the public good be the situation of sustainable exploitation that results.

The phenomena exist in Aceh to common property resource use by regarding the choice as being either to co-operate with others in a rule of restrained access or to not co-operate. The argument is that each individual has a clear preference order of options:

- everyone else abides by the rule while the individual enjoys unrestrained access (he 'free rides' or 'shirks');
- everyone, including himself, follows the rule ('co-operates');
- no one follows the rule;
- he follows the rule while no one else does (he is 'suckered').

In this situation the only solutions are either coercion from outside the group to force people to reach and maintain the social optimum (second preference), or a change in the rules from outside the group to a private property regime.

Table 1. Area of Forest in Aceh

No	Name of district	Characters of forest	Area in hectares
1	Aceh Barat	forest of Preserve	108.001,39
		Permanent Production of Forest	4.648,77
		Another area of use	161.822,08
			274.472,24
2	Aceh Besar	forest of Preserve	71.444,27
		Permanent Production of Forest	75.200,84
		Forest of Reserves/Nature Conservation	25.475,59
		Another area of use	127.030,56
			299.151,26
3	Pidie	forest of Preserve	234.244,90
		Permanent Production of Forest	46.912,26
		Forest of Reserves/Nature Conservation	68,23
		Another area of use	130.526,70
			411.752,09
4	Aceh Jaya	forest of Preserve	192.062,00
		Permanent Production of Forest	57.984,27
		Another area of use	137.586,13
			387.632,40
5	Aceh Selatan	forest of Preserve	155.843,21
		Forest of Limited Production	7.315,94
		Permanent Production of Forest	4.848,48
		Forest of Reserves/Nature Conservation	136.085,33
		Another area of use	111.979,36
			416.072,32
6	Aceh Tengah	forest of Preserve	145.822,34
		Forest of Limited Production	6.097,45
		Permanent Production of Forest	71.376,84

		Forest of Reserves/Nature Conservation	130.231,98
		Another area of use	95.522,72
			449.051,32
No	**Name of district**	**Characters of forest**	**Area in hectares**
7	Aceh Tenggara	forest of Preserve	95.919,19
		Forest of Reserves/Nature Conservation	282.282,94
		Another area of use	39.846,06
			418.048,19
8	Aceh Tamiang	forest of Preserve	47.456,02
		Permanent Production of Forest	40.960,64
		Another area of use	121.062,56
			209.479,22
9	Aceh Timur & Langsa	forest of Preserve	175.398,29
		Production of Forest	112.091,51
		Another area of use	271.345,62
			558.835,42
10	Aceh Utara & Lhokseumawe	forest of Preserve	7.048,14
		Production of Forest	36.316,48
		Forest of Reserves/Nature Conservation	112,00
		Another area of use	237.735,51
			281.212,13
11	Aceh Barat Daya	forest of Preserve	64.692,03
		Forest of Reserves/Nature Conservation	64.817,54
		Another area of use	58.297,88
			187.807,45
12	Bener Meriah	forest of Preserve	65.487,59
		Production of Forest	70.537,02
		Forest of Reserves/Nature Conservation	11,78
		Another area of use	51.647,76
			187.684,15
13	Bireuen	forest of Preserve	32.825,98
		Production of limited Forest	4.656,08
		Production of forest	30.279,20
		Another area of use	112.722,01
			180.483,27
14	Gayo Lues	forest of Preserve	226.575,85
		Forest of Limited Production	22.036,75
		Permanent Production of Forest	29.607,00
		Forest of Reserves/Nature Conservation	205.097,33
		Another area of use	73.188,94
			556.505,87
15	Nagan Raya	forest of Preserve	144.338,05
		Production of Forest	17.783,48
		Another area of use	189.917,00
			352.038,53
16	Sabang		
		forest of Preserve	2.815,34
		Forest of Reserves/Nature Conservation	1.014,12
		Another area of use	6.694,85
			10.524,31
No	**Name of district**	**Characters of forest**	**Area in hectares**
17	Simeulue	forest of Preserve	62.998,85
		Limited of Forest production	27.157,73
		Another area of use	91.456,60
			181.613,18
18	Singkil	forest of Preserve	15.747,44
		Production of Forest	27.414,11
		Forest of Reserves/Nature Conservation	54.254,88

Another area of use	201.206,30
	298.622,73
Total	**5.660.986,07**

Source: Forest Office Aceh, 2001

Conclusion

Despite the common knowledge about the extent to which poor households rely on commons, especially forest commons for significant aspects of their livelihoods, those focusing primarily on poverty have remained inattentive to the contributions of commons scholars. Despite the significant proportion of forests that are governed under communal or community-based arrangements, the assessment fails to include a single reference from the field of commons. Similarly, there is little mention of work by commons scholars in one of the most widely read recent publications on poverty and development (Sachs, 2005).

Such a disjuncture – between the focus of research that has hitherto guided scholars of forest-based commons and the pressing questions related to forests and their fate and livelihoods – is in part a result of the continuing and nearly single-minded concentration of commons scholarship on institutions and property rights. Future research by scholars of forest-based commons needs therefore to incorporate more explicitly issues related to the role of biophysical factors and additional dimensions of institutional effectiveness, the relationship between research and policy effectiveness, the relationship between various levels of analysis, and the extent to which corruption and violence may undermine the sustainability of resource governance.

Scholars of forest commons need also to integrate their research more insistently with substantive concerns about indigeneity and indigenous peoples, concrete forms of social heterogeneities and inequalities, effectiveness of international aid, and local livelihoods and poverty. This review has suggested that the scholarly work on forest-based commons has helped greatly to identify the institutional factors that help lead to sustainable resource governance. However, the extent to which it has successfully found visibility in relation to global concerns about deforestation and the relationship between forests and livelihoods remains an open question (Nepstad *et al.*, 2006).

As well as events in Aceh forest management by the government has not put the position of the government as forest owners. The situation is further made forest communities and the people who use the forest can freely exploit forest with no regulation from government institutions that consistently protect forests. Phenomenon of forest as common property resources is clearly visible in the way the utilization of forest resources by the public. Hopefully, future policies will be constructed based on an understanding of both the strengths and limitations of self-governance of forestry resources.

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